CLAIMS

1. A micropump utilizing gas generation comprising:

a silicon substrate having a reservoir for H_2O_2 solution formed therein;

a SiO_2/Si_3N_4 film formed on the silicon substrate; and

a PDMS combined on the SiO_2/Si_3N_4 film,

wherein the PDMS includes a reservoir for MnO_2 confronting the reservoir for H_2O_2 solution on the other side of the SiO_2/Si_3N_4 film, a sample reservoir connected to the reservoir for MnO_2 through a conduit, a sample injection opening connected to an end of the sample reservoir, and a minute channel leading to an exterior of the micropump from another end of the sample reservoir.

2. A production method of a micropump utilizing gas generation, comprising the steps of:

forming a reservoir for MnO_2, a sample reservoir connected to the reservoir for MnO_2 through a conduit, a sample injection opening connected to an end of the sample reservoir, and a minute channel leading to an exterior of the micropump from another end of the sample reservoir by forming a negative photoresist SU-8 layer and patterning on a silicon substrate;

forming a PDMS on the SU-8 layer;

forming a SiO_2 film and a Si_3N_4 film sequentially on another silicon substrate;

forming a reservoir for H_2O_2 solution by etching the bottom surface of the silicon substrate having the SiO_2 film and the Si_3N_4 film formed thereon;

securing a bottom plate to the bottom of the reservoir for H_2O_2 solution; and

combining the PDMS on the silicon substrate having the reservoir for H_2O_2 solution formed therein after removing the PDMS from the silicon substrate and SU-8 pattern.

3. A micropump utilizing gas generation comprising:

a bottom plate constituting a bottom surface;

a hot-wire formed inside a reservoir on the bottom plate; and

a PDMS combined on the bottom plate,

wherein the PDMS includes the reservoir, a sample reservoir connected to the reservoir through a conduit, a sample injection opening connected to an end of the sample reservoir, and a minute channel leading to an exterior of the micropump from another end of the sample reservoir.

4. The micropump utilizing gas generation of claim 3, further comprising a paraffin layer mixed with MnO_2 powder formed on the hot-wire,

wherein the reservoir reserves H_2O_2 solution.

5. The micropump utilizing gas generation of claim 3, wherein the reservoir reserves $NaHCO_3$ solution.

6. The micropump utilizing gas generation of claim 3, further comprising a water droplet enveloped in a Parafilm arranged on the hot-wire,

wherein the reservoir reserves a mixture of $NaHCO_3$ and $HOC(COOH)(CH_2COOH)_2$.

7. A production method of a micropump utilizing gas generation, comprising the steps of:

forming a hot-wire inside a reservoir on a bottom plate;

combining a PDMS having the reservoir formed therein on the bottom plate; and

combining another PDMS including a sample reservoir connected to the reservoir through a conduit, injection openings respectively connected to each ends of the

reservoir and the sample reservoir, and a minute channel leading to an exterior of the micropump from another end of the sample reservoir on the PDMS having the reservoir formed therein.

8. A cell culture unit utilizing gas generation comprising:

a bottom plate constituting a bottom surface;

a hot-wire formed inside a reservoir for holding $NaHCO_3$ on the bottom plate;

a PDMS including the reservoir formed by combining the PDMS on the bottom surface and an air supply line connected to the reservoir through a conduit;

a thin permeable PDMS film arranged on the PDMS; and

a PDMS cover being combined on the PDMS film and having an engraved media-line confronting the air supply line on the other side of the PDMS film.